Name: _____   Date: _____

Exam: Function Reflections (EXAM version 608)

1. (worth 9 points) Let function f be defined by the polynomial below:

$$f(x) \;=\; -5x^5 + 3x^4 + 7x^3 + 9x^2 - 6x - 8$$

Draw lines that match each function reflection with its polynomial:

Reflections	Polynomials

$-f(x)$ ●   ● $\quad 5x^5 - 3x^4 - 7x^3 - 9x^2 + 6x + 8$

$f(-x)$ ●   ● $\quad 5x^5 + 3x^4 - 7x^3 + 9x^2 + 6x - 8$

$-f(-x)$ ●   ● $\quad -5x^5 - 3x^4 + 7x^3 - 9x^2 - 6x + 8$

2. (worth 20 points) In each xy plane shown below, a function is graphed with blue. Draw the indicated reflections (as a second curve, indicated in legend) with black (or with whatever you have). The x axis is horizontal and the y axis is vertical (as typical), and the scale is equal on both axes.

● $y = g(x)$
● $y = -g(x)$

● $y = h(x)$
● $y = -h(-x)$

● $y = m(x)$
● $y = m^{-1}(x)$

● $y = p(x)$
● $y = p(-x)$
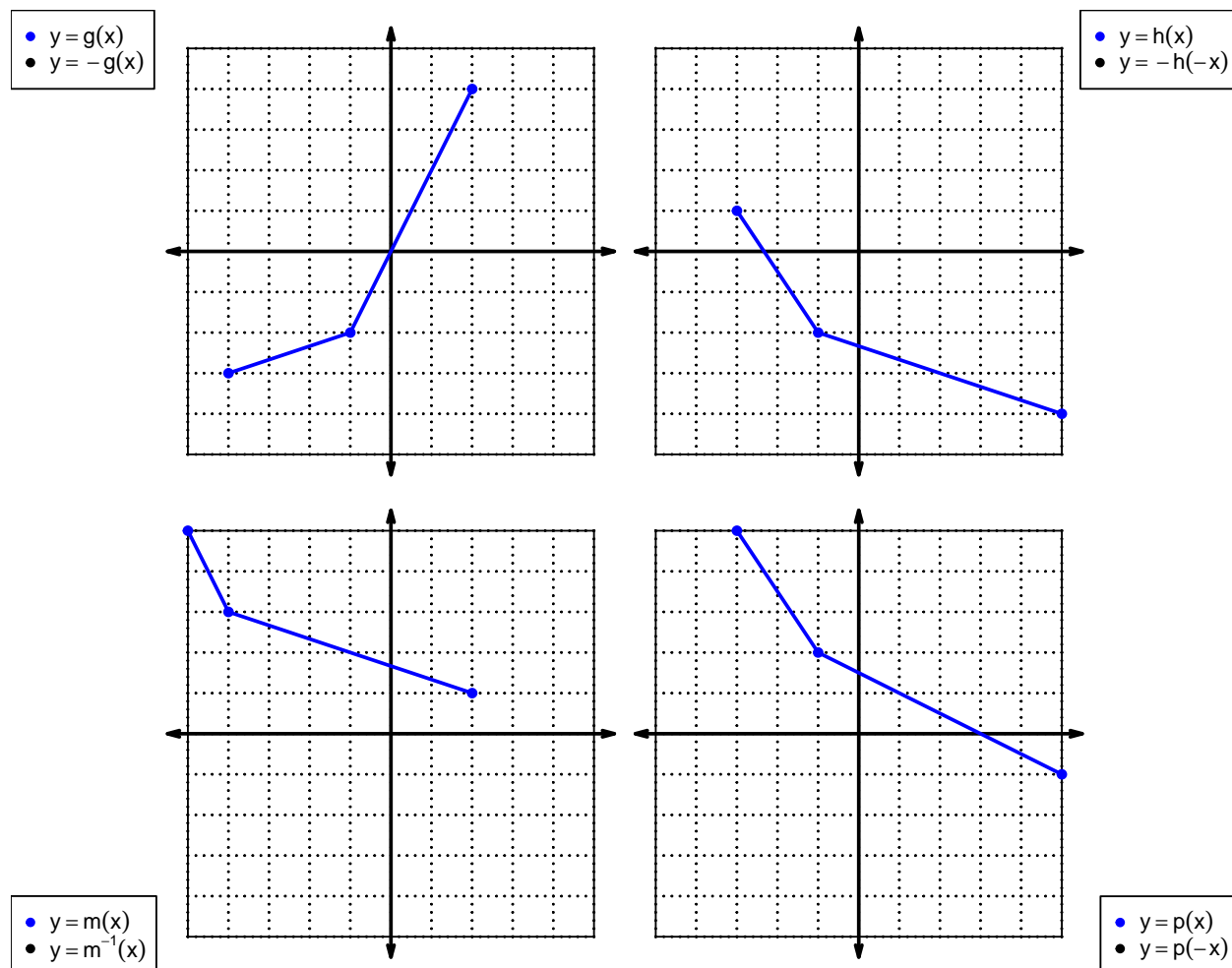
Exam: Function Reflections (EXAM version 608)

For all questions on this page, the functions f, g, and h are defined by the table below.

x	$f(x)$	$g(x)$	$h(x)$
1	3	5	7
2	1	9	5
3	8	4	4
4	6	2	2
5	9	6	8
6	7	8	3
7	5	3	9
8	2	7	1
9	4	1	6

3. (worth 3 points) Evaluate $h(8)$.

4. (worth 3 points) Evaluate $f^{-1}(4)$.

5. (worth 3 points) Assuming h is an **even** function, evaluate $h(-3)$.

6. (worth 3 points) Assuming g is an **odd** function, evaluate $g(-5)$.

Exam: Function Reflections (EXAM version 608)

7. (worth 15 points) A function, f, is **even** if $f(x) = f(-x)$ for all x in the domain. A function, g, is **odd** if $g(x) = -g(-x)$ for all x in the domain.

Let polynomial p be defined with the following equation:

$$p(x) = -x^3 - x$$

    a. Express $p(-x)$ as a polynomial in standard form.
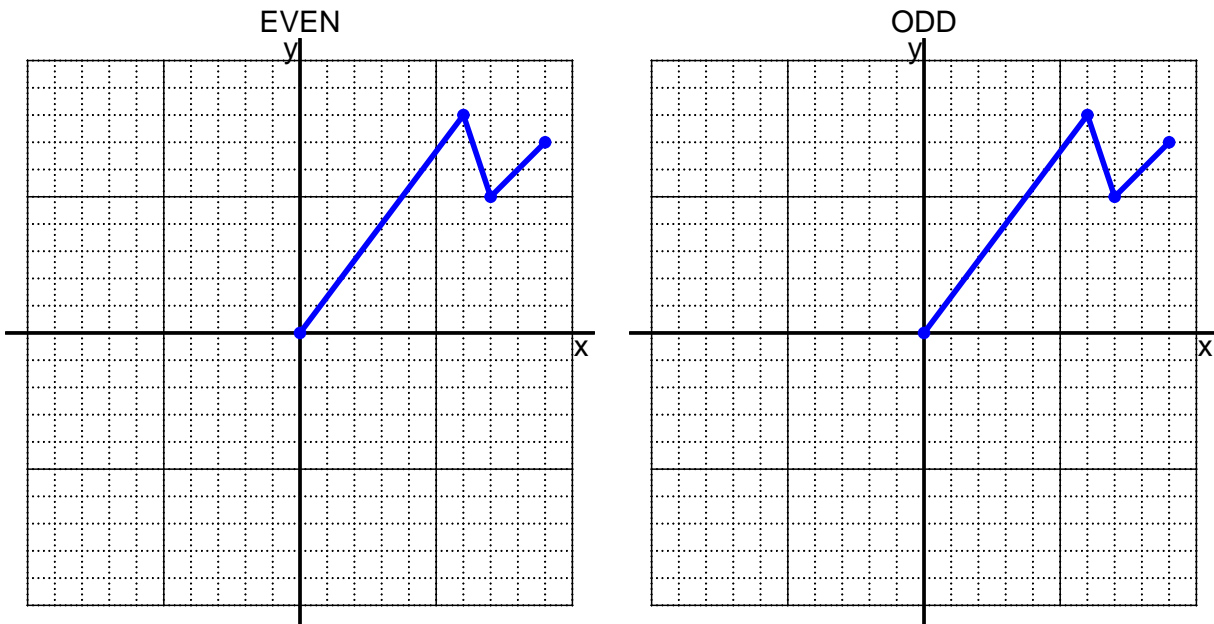
    b. Express $-p(-x)$ as a polynomial in standard form.

    c. Is polynomial p even, odd, or neither?

    d. Explain how you know the answer to part c.

Exam: Function Reflections (EXAM version 608)

8. (worth 10 points) I have drawn half of a function. Draw the other half to make it even or odd.

EVEN

ODD

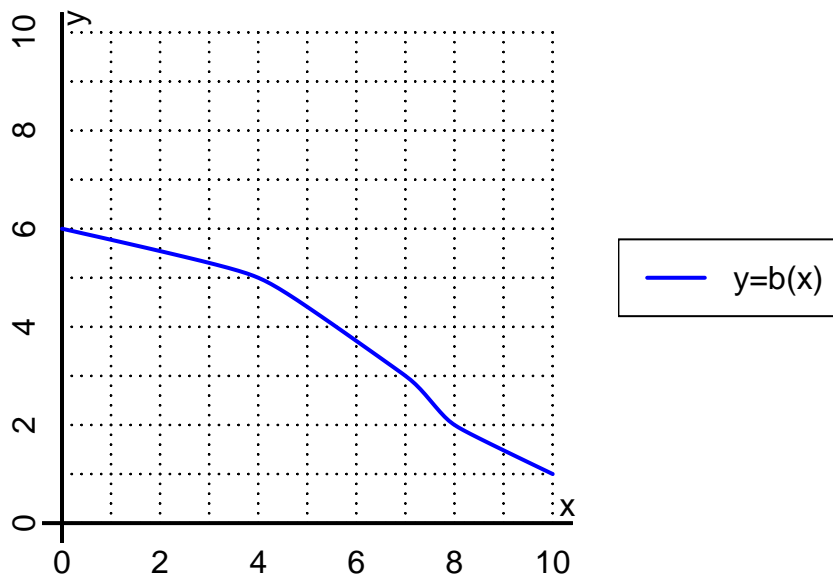9. (worth 10 points) Let function f be defined with the equation below.

$$f(x) = 4(x - 5)$$

a. Evaluate $f(10)$.

b. Evaluate $f^{-1}(80)$.

Exam: Function Reflections (EXAM version 608)

10. (worth 6 points) The function b is represented by the curve $y = b(x)$ graphed below.

a. Evaluate $b(4)$.

b. Evaluate $b^{-1}(3)$.

Exam: Function Reflections (EXAM version 608)

11. (worth 18 points) Function f is defined by the table below.

    a. Complete the columns for $-f(x)$ and $f(-x)$ and $-f(-x)$.

x	$f(x)$	$-f(x)$	$f(-x)$	$-f(-x)$
-2	6			
-1	5			
0	0			
1	5			
2	-6			

b. Is function f even, odd, or neither?

c. How do you know the answer to part b?